

Artificial intelligence and the changing sources of competitive advantage

Year: 2022 | Citations: 287 | Authors: Sebastian Krakowski, Johannes Luger, Sebastian Raisch

Abstract

Research Summary: We apply a resource-based view to investigate how the adoption of Artificial Intelligence (AI) affects competitive capabilities and performance. Following prior work on using chess as a controlled setting for studying competitive interactions, we compare the same players' capabilities and performance across conventional, centaur, and engine chess tournaments. Our analysis shows that AI adoption triggers interrelated substitution and complementation dynamics, which make humans' traditional competitive capabilities obsolete, while creating new sources of persistent heterogeneity when humans interact with chess engines. These novel human-machine capabilities are unrelated, or even negatively related, to traditional capabilities. We contribute an integrated view of substitution and complementation, which identifies AI as the driver of these dynamics and explains how they jointly shift the sources of competitive advantage.

Managerial Summary: AI-based technologies increasingly substitute and complement humans in managerial tasks such as decision making. We investigate how such change affects the sources of competitive advantage. AI-based engines' adoption in chess allows us to investigate competitive capabilities and performance in human, AI, and hybrid settings. We find that neither humans nor AI